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SUBJECT Tesla Production of Geiger-Mueller Tubes

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THIS IS UNEVALUATED INFORMATION

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1. The development of Czechoslovak Geiger-Mueller tubes took place at the Kment Firm. This was a small firm engaged in the development and production of various special instruments, such as mercury diffusion pumps. [redacted] the location of this firm [redacted] was 25X11 in Prague. During the so-called second nationalization, after the Communist Coup of 1948, this firm was liquidated and its activities transferred to different Tesla enterprises. For instance, the production of nuclear-counters was transferred to the Tesla Plant in Pardubice. The development of the Geiger-Mueller tubes was transferred to the Tesla National Enterprise, Vrsovice Plant, in Prague-Vrsovice, 55 SNB Allee.

2. The development of the tubes was accomplished in the Tesla-Vrsovice plant during 1949 and a few samples were produced at the end of that year. Mass production started in 1950. Two types of tubes were produced: GMT-16/100 and GMT-30/300. The first number denotes the diameter of the cathode in millimeters and the second number denotes the length of the cathode. Although the tubes were a result of Czechoslovak development, foreign literature was studied. The chief of this development was Doctor of Science KUHN (fnu), a former employee of the Kment Firm. He left the Tesla plant in the autumn of 1950 to continue his work on the development of other types of GM tubes, in a special department located in the former building of the General Management, Tesla, National Enterprise, Prague II, Karlovo Square #7. Sometime at the end of 1950 the Research Institute for Electrotechnical Physics was started. The development of the tubes in the Tesla-Vrsovice plant was located in a small, modest department. The production which followed was spread throughout the plant and

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later on, the glass works were located in a special department. It was planned to produce 1,320 units in 1951, and 2,220 units in 1952, of the GMT-16/100 type. It was planned to produce 1,630 in 1951 and 1,800 units in 1952, of the GMT-30/300. However, the actual production was only one third to one half of the planned figures. The actual production represented about three per cent of the total production capacity of the Tesla-Vrsovice plant. Production of 500 units of the GMT-16/100 type was planned for 1953 and 100 units of the GMT-30/300 type. This decrease in the production figures for 1953 was based on the plan to transfer the GM tube production from the Vrsovice to the Tesla-Holesovice National Enterprise, located in Prague-Holesovice, 15 Jankovcova Street. This plant was engaged in the production of electric bulbs. In fact, this transfer was being discussed from the second half of 1951 but as of the spring of 1953, this transfer had not taken place, mainly because the other Tesla plant did not wish to take over this production. The Tesla-Vrsovice management continued to state that the GM tube production was not within the scope of their plant's output.

3. The production of the GM tubes suffered from continuous and serious failures: first, the management was not interested in the production of the tubes because the price of the product was low (about 1,000 crowns) and therefore the fulfillment of the production plan was not as advantageous as the fulfillment of the electronic-tubes plan; second, leading anti-Communist technicians and workers were not interested in the production of the tubes because all the tubes went to the Jachymov Uranium Mines, and further, because highly qualified employees were not assigned to the production.

The tubes developed the following defects:

a. The seal between the lead-glass base, probably natron glass, and the envelope was poor and broke easily. About 50% of all the tubes produced were defective for this reason.

b. The glass broke where the wires entered the glass envelope because of careless handling.

c. The supporting wires broke easily because they were carelessly produced. The total number of rejects for this reason reached some 50 to 70%.

4. The finished tubes were tested in the testing department of the plant by means of a nuclear counter, a Tesla-Pardubice product. The tubes were tested for reaction to cosmic rays and sometimes to uranium ore. The number of impulses in a given period of time was noted. The same tests were repeated after two weeks and again after four weeks to ascertain the stability of the tube activity. From time to time a few sample tubes were sent to the Tesla-Pardubice plant where they were tested on special measuring instruments and sent back to the Vrsovice plant along with a technical evaluation. (Special measuring instruments were available in the Tesla-Pardubice plant because of the production of nuclear counters there.)

5. The glass envelope, a Jena product, was imported from Eastern Germany. The quenching gas was prepared by Dr. KUHN and delivered in glass containers about 50 cm. long. This quenching gas was a mixture of various gases but the composition was secret. Prior to 1951, the argon was imported from abroad; [redacted] Starting from 1951 it was delivered by an Ostrava firm [redacted] It was delivered in similar containers as the quenching gas. The Bakelite supporting base and cover was delivered by a Czechoslovak firm [redacted]. All other parts were produced and the assembly made in the Tesla-Vrsovice plant.

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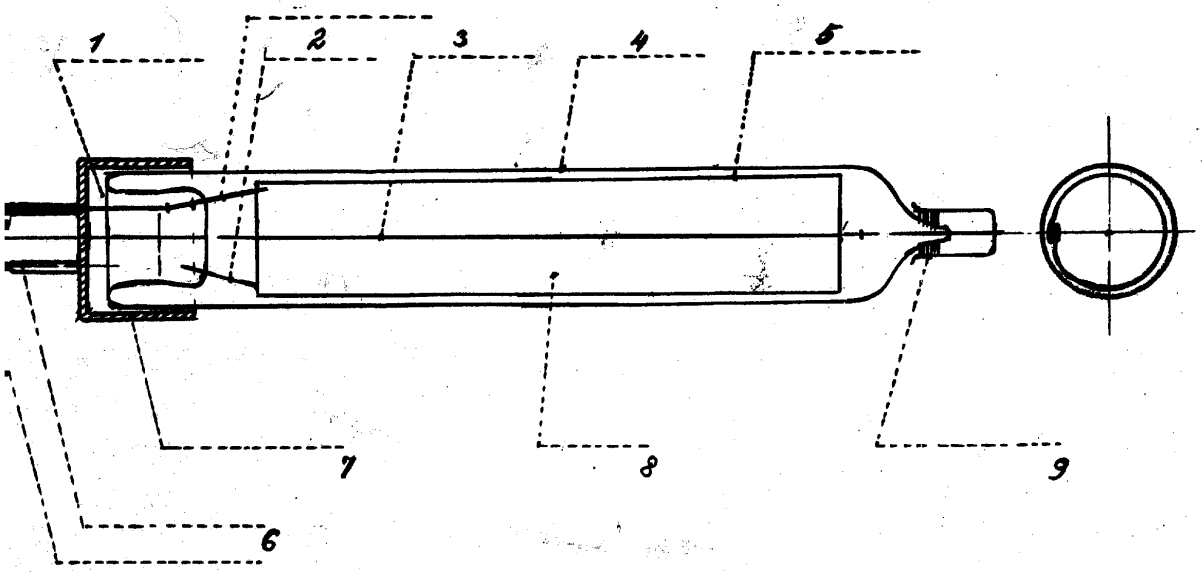
6. The total output was for the Jachymov /N 50-22, E 12-557 Uranium Mines. They were used along with nuclear counters, made at the Tesla Pardubice plant, to ascertain the intensity and value of uranium layers.

Annex A:

Sketch of the Geiger-Mueller Tube



Annex A. Sketch of the Geiger-Mueller Tube

LEGEND

1. Lead-Glass Base: same as used with standard receiver electronic tubes.
2. Supporting Nickel Wires
3. Anode: tungsten wire 0.1 mm. (taut)
4. Glass Envelope: probably natron glass
5. Copper Tubing: about 0.05 mm. thick
6. Copper Prongs
7. Supporting Base: made of Bakelite; the same as used with all types of receiver electronic tubes.
8. Mixture of Argon and of a So-called "Quenching" Gas
9. Covering and Outlet of the Anode: the covering was the same as used with the standard receiver electronic tubes with supporting base.